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PROSPECTING FOR AND PROCESSING OF BAUXITE

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of alumina. Since some 90-91 % of the world's alumina production is used for the production of aluminium, an equilibrium has been established on a world scale between the alumina and aluminium plant capacities, although in many places the geographical location of the alumina and aluminium plants does not coincide. On account of the costs of forwarding, the tendency is to locate the alumina plants as near as possible to the bauxite deposits and the aluminium plants near the power source. At present the United States, the Soviet Union and Canada possess the highest production capacities for alumina.

Aluminium is produced by the electrolysis of the alumina $/Al_2O_3/$ between carbon electrodes in melt of cryolite, with the utilization of approximately 1,9 specific alumina and a large amount of electric power. This is why an economic primary aluminium production is possible only in places, where cheap electric power is available in large amounts. The electric power supplies come mostly from hydroelectric power plants and to a smaller extent from thermoelectric power stations. According to preliminary figures, the world's primary aluminium production in 1961 amounted to 4,446,000 long tons, with the United States, the Soviet Union, Canada, France, Norway, the German Federal Republic, Japan, as the principal aluminium-producing countries.

The industrial utilization of aluminium is of a rich variety and the fields of employment extend all the time. Aluminium is utilized in transport and the manufacture of vehicles, in building industry, electrical engineering, in the manufacture of machinery and appliances, in the food and packaging industries metallurgy of non-ferrous metals, the chemical industry, manufacturing of pans and other household utensils, as well as of mass products.

For economically under-developed countries the realization of bauxite production presents the least difficult problems, since it involves relatively little investment and equipment for production, further only a small number of technically trained personnel, particularly in the case of opencast mining. From the point of view of transport, marketing and employment, it is advantageous to link up the production of bauxite with the production of alumina. If rich sources of power are available, the building of an electric power plant and, next to it, of an aluminium smelter, can be considered. In under-developed countries the production of half-finished or finished aluminium ware is generally established in accordance with home consumption.

For utilizing its bauxite resources a country with a poorly developed economy may possibly require the technical and economic assistance of the developed countries, such as the delegation or training of experts, the completion of engineering and economic plans, means of production and transportation, credits or financial aid.